DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Resource Conservation and Recovery Act (RCRA) Corrective Action Environmental Indicator (EI) RCRAInfo code (CA750) Migration of Contaminated Groundwater Under Control

Facility Name: Caribe General Electric Products

Facility Address: Sabana Llana Industrial Park, Río Piedras, Puerto Rico

Facility EPA ID#: PRD000692590

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EIs developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI (CA750)

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA Corrective Action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While final remedies remain the long-term objectives of the RCRA Corrective Action program, the EIs are near-term objectives which are currently being used as program measures for the Government Performance and Results Act of 1993 (GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated groundwater and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determination status codes should remain in the Resource Conservation and Recovery Information System (RCRAInfo) national database ONLY as long as they remain true (i.e., RCRAInfo status codes must be changed when the regulatory authorities become aware of contrary information).

Facility Information

The former Caribe General Electric (GE) Products Inc. (facility) was located in an industrial area in Río Piedras on the northeastern coast of Puerto Rico. The facility covers approximately four acres in a relatively low lying terrain. Currently the facility is bordered to the north by Max Chemicals, to the south by Caribbean Signs, to the east by the Puerto Rico Electric Power Authority's San Juan regional offices, and to the west by Calle 5.

The facility is situated on the northern coastal plain in a relatively flat industrial/urban area of Río Piedras with an elevation between 20 and 40 feet above mean sea level (amsl). The nearest surface water body is Laguna San José, located approximately 2 kilometers north of the facility immediately followed by the Atlantic Ocean north of Laguna San José. Groundwater flow direction at the facility is assumed to be north towards Laguna San José and the Atlantic Ocean. Regional geology of the area is characterized by alluvial deposits (Ref. 4). The alluvium consists of silty and sandy clay and is mainly red or mottled redlight gray in color. The thickness of the unit is estimated to be greater than 100 meters.

The facility was originally used for manufacturing fuses and other electrical accessories including current limiting fuses, home lighting protectors, fuse links, radio energy management systems, watt hour meters, and electrical relays (Ref. 1 & 2). Manufacturing operations began in March 1966 within Building 1. A second building (Building 2) was added to the manufacturing operations in August 1969. Building 2 was reportedly used for storage of finished products manufactured from other GE plants and the manufacturing of plastic parts for electrical accessories. Building 1 was sold to General Electric of Caribe in 1986 (Ref. 1 & 2). The building was subsequently sold to the Puerto Rico Industrial Development Company (PRIDCO) sometime between 1986 and 1999 (Ref. 2). PRIDCO then sold Building 1 to Active Salesman Company in 1999 (Ref. 2). PRIDCO currently owns (i.e., as of 2013) Building 2. The facility is currently used for general storage, warehousing, and process activities involved with the fabrication of metal signage. Active Salesman Company utilizes Building 1 for administrative activities and storage of packing materials and paper products (e.g., take-out containers, paper towels, napkins, etc.). Building 1 stored products used to supply local restaurants and event planning companies. As of 2013, Building 2 was operated by Caribbean Signs to produce signage. The two buildings are no longer connected to one another. Prior to 1985, the facility-generated waste from the GE manufacturing and painting processes included 1,1,1-trichloroethlene, alcohol flux, a corrosive solution from bright dip process, flux oil, lead scrap, polybutadiene resin, sludge from phosphatizing process, sodium hydroxide, spent cresylic acid, spent oil, waste oxidizer, waste paint, and wastewaters from electroplating processes (Ref. 1 & 2).

On August 18, 1980 GE submitted a Notification of Hazardous Wastes Activity to the United States Environmental Protection Agency (EPA) and identified the facility as a Generator and a Treatment, Storage and Disposal (TSD) facility. Then, on November 19 1980, GE submitted the Part A Permit Application to EPA. According to the application, Building 1 was used for the storage of the following hazardous wastes: D001, D002, D008, F001, F004, K054, P104, P098, and U133 while Building 2 stored the following hazardous wastes: D001, D002, K054, and U133. On November 29, 1984 GE submitted a petition to the Puerto Rico Environmental Quality Board (EQB) to reclassify their status to a Large Quantity Generator (LQG). As a result, GE submitted a work plan for closure of its Hazardous Waste Storage Area on October 20, 1985. The closure work plan was revised by EPA and EQB between 1986 and 1987. A public notice announcing the closure plan was issued on January 16, 1988 and the plan was finally approved by EPA and EQB on March 8, 1988. With the concurrence of EPA (Ref. 3), EQB finally approved the final closure certification for the former Hazardous Waste Container Storage Area on January 28, 1991 (Ref. 4) and the Facility was reclassified as a LQG.

On September 8, 1984 a spill of approximately 20 to 25 gallons of cresylic acid occurred within the Paint Room of Building 1. The spill was contained within the building and spill waste was managed using absorbent pads which were containerized within 55-gallon drums and disposed appropriately (Ref. 1 & 2). On July 6, 1989 EQB conducted a Visual Site Inspection (VSI) as part of a RCRA Facility Assessment (RFA). The RFA recommended further investigation to determine if spill of cresylic acid migrated to soil media (Ref. 1 & 2). Based on the RFA, EPA imposed a RCRA Facility Investigation (RFI) on July 12, 2010 (Ref. 5).

1.	Has all available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been considered in this Edetermination?		
	X	If yes - check here and continue with #2 below.	
		If no - re-evaluate existing data, or	
		If data are not available, skip to #8 and enter "IN" (more information needed) status code	

Summary of Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs):

In November 1989, a RCRA Facility Assessment (RFA) of the Caribe General Electric Products, Inc. facility in Río Piedras Puerto Rico was completed by EQB. The RFA identified one SWMU, the Hazardous Waste Container Storage Area (SWMU 1), and one AOC, the Paint Room (AOC 1).

SWMU 1 consisted of an 18-ft by 40-ft drum storage area with a 4-inch high dike and three sumps to contain any release of hazardous waste (Ref. 1). The base of the SWMU 1 was made of a 4-inch thick concrete slab. The RFA recommended no further action for SWMU 1. In 1988 this SWMU was closed. EPA and EQB approved the closure of SWMU 1 (Ref. 3 & 4).

AOC 1 was located on the east side of the facility, on the manufacturing area and was used for the painting of relay steel enclosures. Among the raw materials used in this area were paint thinner and cresylic acid. On September 8, 1984 a spill of approximately 20 to 25 gallons of cresylic acid occurred within AOC 1. The spill was contained within the building and spill waste was managed using absorbent pads which were containerized within 55-gallon drums and disposed appropriately (Ref. 1 & 2). The RFA recommended further investigation to determine if spill of cresylic acid migrated to soil media (Ref. 1 & 2). Based on the RFA, EPA imposed a RCRA Facility Investigation (RFI) on July 12, 2010 (Ref. 5). The RFI consisted of surface (0-2 ft) and subsurface (2-4 ft) samples that were collected beneath the concrete slab at the former location of AOC 1 and analyzed for cresol compounds (i.e. 2-methylphenol, 3-methylphenol, 4-methylphenol). Results indicate that soil media beneath AOC 1 was not impacted by cresylic acid. Given the results of the RFI, no groundwater contamination is expected and No Further Action (NFA) is necessary at the facility (Ref. 2). On November 20, 2012, EPA concurred with GE and recommended that Corrective Action at the facility be terminated (Ref. 6).

2.	protec guidel	Is groundwater known or reasonably suspected to be " contaminated " above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standard guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere a or from, the facility?	
		If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.	
	<u>X</u>	If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."	
		If unknown - skip to #8 and enter "IN" status code.	

Rationale:

Based on review of the available file material, there are no known releases to groundwater from the facility (Ref. 1 and 2). On March 2012, GE conducted soil sampling as part of the RCRA Facility Investigation. Surface (0-2 ft) and subsurface (2-4 ft) samples were collected beneath the concrete slab at the former location of AOC-1 and analyzed for cresol compounds (i.e. 2-methylphenol, 3-methylphenol, 4-methylphenol). Results indicate that soil media beneath AOC 1 was not impacted by cresylic acid. Given the results of the RFI, no groundwater contamination is expected and No Further Action (NFA) is necessary at the facility (Ref. 2). On November 20, 2012, EPA concurred with GE and recommended that Corrective Action at the facility be terminated (Ref. 6).

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¹ "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

3.	Has the migration of contaminated groundwater stabilized (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater" as defined by the monitoring locations designated at the time of this determination)?		
		If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination" ² .	
		If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination" ²) - skip to #8 and enter "NO" status code, after providing an explanation.	
		If unknown - skip to #8 and enter "IN" status code.	
Ration	ale:		
Not Ap	plicable		

² "Existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

4.	Does "contaminated" groundwater discharge into surface water bodies?		
		If yes - continue after identifying potentially affected surface water bodies.	
		If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.	
		If unknown - skip to #8 and enter "IN" status code.	
Ration	<u>ale</u> :		
Not Ap	plicable		

5.	Is the discharge of "contaminated" groundwater into surface water likely to be " insignificant " (i.e., the maximum concentration ³ of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or ecosystems at these concentrations)?		
		If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration ³ of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgment/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or ecosystem.	
		If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.	
Ration	—— nale:	If unknown - enter "IN" status code in #8.	

Not Applicable

³ As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

a	an the discharge of "contaminated" groundwater into surface water be shown to be " currently cceptable " (i.e., not cause impacts to surface water, sediments or ecosystems that should not be llowed to continue until a final remedy decision can be made and implemented ⁴)?
	If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and ecosystems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment ⁵ , appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialist, including an ecologist) adequately protective of receiving surface water, sediments, and ecosystems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interimassessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.
_	If no - (the discharge of "contaminated" groundwater cannot be shown to be " currently acceptable ") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or ecosystem.
_	If unknown - skip to 8 and enter "IN" status code.
Rational	2 :
Not Appl	icable

⁴ Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

⁵ The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

	Will groundwater monitoring /measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"		
	<u> </u>	If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."	
		If no - enter "NO" status code in #8.	
		If unknown - enter "IN" status code in #8.	
Rationa	<u>ale:</u>		
Not App	olicable		

8. Check the appropriate RCRAInfo status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility). YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. XBased on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the Caribe General Electric Products, Inc. site, EPA ID# PRD000692590, located at in Río Piedras, Puerto Rico, under current and reasonably expected conditions. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control. This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility. NO - Unacceptable migration of contaminated groundwater is observed or expected. IN - More information is needed to make a determination. Completed by: David Cuevas-Miranda, Project Manager Response & Remediation Branch/CEPD EPA Region 2 Date: 3/25/13 Reviewed by: Ramón Torres, Branch Chief Response & Remediation Branch/CEPD EPA Region 2 Approved by: José C. Font, Director Caribbean Environmental Protection Division

EPA Region 2

References:

- 1. RCRA Facility Assessment Report, Caribe GE Products, Inc., Río Piedras, Puerto Rico, PRD000692590. Prepared by Puerto Rico Environmental Quality Board. November 1989.
- 2. RCRA Facility Investigation Report, Río Piedras, Puerto Rico, Caribe General Electric Products, September 2012. Prepared by Arcadis of New York, Inc.
- 3. Correspondence from Michael Poetzsch, USEPA, to Flor del Valle, EQB. Re: Closure Certification of Container Storage Area, Caribe GE Rio Piedras, Puerto Rico. Nov 30, 1990
- 4. Correspondence from Flor del Valle, EQB, to Heriberto Ayala, Plant Manager Caribe GE Product Río Piedras. Re: Closure Certification Approval Hazardous Waste Containers Storage Area. January 28, 1991.
- 5. Correspondence from David N. Cuevas, USEPA, to Joel Robinson, Global Remediation Manager GE Consumer & Industrial. Re: RCRA Facility Investigation. July 12, 2010.
- 6. Correspondence from David N. Cuevas, USEPA, to Joel Robinson, Global Remediation Manager GE Consumer & Industrial. Re: Approval of the September 2012 RCRA Facility Investigation Report, former Caribe GE Products, Río Piedras, Puerto Rico. November 20, 2012.

Locations where references may be found:

References reviewed to prepare this EI determination have been identified in the Facility Information section. Reference materials are available at U.S. EPA, Region 2.

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